

AMENDMENTS TO THE CLAIMS

1-51 (Canceled)

52. (Withdrawn – currently amended) A method for transferring substances between layers of fluid or liquid or between layers of gas, said method comprising

- i. providing a device comprising
 - a. at least one convective layer for conducting either a fluid liquid or gas of interest, where said fluid liquid or gas comprises at least a first substance to be removed and optionally said fluid liquid or gas is to be enriched by at least a second substances substance, and wherein said at least one convective layer has a thickness between 1 mm and 5 cm when conducting liquids and within 0.1 and 2 mm when conducting gas, and
 - b. at least one receiving layer for conducting either fluid liquid or gas of similar form as in the convective layer and said liquid or gas fill out empty space of said receiving layer and to which receiving layer or from which receiving layer the substances are transferred, and wherein said at least one receiving layer is designed as a structure having a fluid-proof or nearly fluid-proof frame located to obtain almost stagnant liquid or gas in the receiving layer or to obtain a liquid or gas running in another direction than in the convective layer through an inlet and/or outlet structure, or
said at least one receiving layer has a grid-like substructure, or a ridge and valley structure perpendicular to the main direction of flow of the convective layer, or

said at least one receiving layer has a filtering material selected from the group of sand, gravel, perlite, vermiculite, anthracite, activated carbon, charcoal, diatomaceous soil, chitin, chitosan, pozzolan, lime, marble, clay, iron-oxide-coated minerals (e.g sand), double metal-hydroxides, LECA, rockwool, glass wool, zeolites, fly ash, soil, limed soil, iron-enriched soil, bark, humus, lignin, compost, leaves, seaweed, algae, alginate, xanthate, peat moss, bone gelatin beads, moss, wool, cotton, cocos fibres, other plant fibres, and modification hereof, and/or

said at least one receiving layer and said at least one convective layer have a length of at least 5 m, and

wherein said device is located such that said at least one convective layer and said at least one receiving layer are positioned horizontally or at an angle between horizontal and inclining 45° from horizontal,

- ii. passing a fluid liquid or gas to be treated through said device, wherein said fluid liquid or gas of interest within said at least one convective layer is running in a direction parallel to said at least one receiving layer, and wherein fluid liquid or gas in said at least one receiving layer is either:
 - a. stagnant, or
 - b. running in another direction, and/or running with a different speed, when compared to the fluid liquid or gas in said at least one convective layer,
- iii. allowing substances to be transferred to or from said at least one receiving layer without said receiving layer being percolated by said fluid liquid or gas of interest of the convective layer, such that the first substance is removed from said fluid

liquid or gas and optionally said fluid liquid or gas is optionally enriched by the second substance, and

- iv. obtaining a fluid liquid or gas of interest in said at least one convective layer from which the first substance is removed and said fluid liquid or gas is optionally enriched by the second substance.

53. (Withdrawn) The method according to claim 52, wherein the receiving layer is positioned below the convective layer.

54. (Withdrawn) The method according to claim 52, wherein the substances are transferred to the at least one receiving layer due to sedimentation, mixing layer mass flow, and/or diffusion.

55. (Withdrawn) The method according to claim 54, wherein the substances are retained within the receiving layer by precipitation, sorption or any other retention mechanism.

56. (Withdrawn) The method according to claim 54, wherein the receiving layer further has an affinity for the substances.

57. (Withdrawn) The method according to claim 52, where the filter further comprises a second receiving layer adjacent the convective layer and opposite the first receiving layer.

58. (Withdrawn) The method according to claim 52, where at least one receiving layer comprises material selected from the list consisting of sand, gravel, perlite, vermiculite, anthracite, activated carbon, charcoal, limed soil, iron-enriched soil, diatomaceous soil, chitin, chitosan, pozzolan, lime, marble, clay, iron-oxide-coated minerals, double metal-hydroxides, LECA, rockwool, glasswool, zeolites, fly ash, soil, humus, bark, lignin, compost, leaves, seaweed, algae, alginate, xanthate, peat moss, bone gelatin beads, moss, wool, cotton, other plant fibres, and combinations thereof.

59. (Withdrawn) The method according to claim 52, wherein the convective layer is empty space.

60. (Withdrawn) The method according to claim 52, wherein the at least one convective layer comprises a mass of random filament-type plastic fibers with a density which is sufficient to support the filter unit without significant collapse, but allow water to pass freely therethrough.

61. (Withdrawn) The method according to claim 52, wherein the hydraulic conductivity of the convective layer is at least 1.1 times the hydraulic conductivity of the receiving layer in the main flow direction.

62. (Withdrawn) The method according to claim 52, wherein the liquid to be filtered comprises waste water, industrial waste water, urban waste water, highway runoff, stormwater.

63. (Withdrawn) The method according to claim 52, wherein the liquid to be filtered comprises urban waste water, highway runoff, road runoff and/or stormwater.

64. (Currently amended) A device for transferring substances between layers of fluid or liquid or between layers of gas, said device comprises at least one unit of a filter, said unit of a filter comprising

- i. at least one convective layer for conducting either a fluid liquid or gas of interest, where said fluid liquid or gas comprises at least a first substance to be removed and optionally said fluid liquid or gas is to be enriched by at least a second substance, and wherein said at least one convective layer has a thickness between 0.1 mm and 5 cm,
- ii. at least one receiving layer for conducting either fluid liquid or gas of similar form as in the convective layer and said liquid or gas fill out empty space of said receiving layer and to which receiving layer or from which receiving layer the substances are transferred such that the first substance is removed from said fluid liquid or gas and optionally said fluid liquid or gas is enriched by the second substance, and
wherein said at least one receiving layer is designed as a structure having a fluid-proof or nearly fluid-proof frame located to obtain almost stagnant liquid or gas in the receiving layer or to obtain a liquid or gas running in another direction than in the convective layer through an inlet and/or outlet structure, or

said at least one receiving layer has a grid-like substructure or has a ridge and valley structure perpendicular to the main direction of flow of the convective layer, or

said at least one receiving layer has a filtering material selected from the group of sand, gravel, perlite, vermiculite, anthracite, activated carbon, charcoal, diatomaceous soil, chitin, chitosan, pozzolan, lime, marble, clay, iron-oxide-coated minerals (e.g sand), double metal-hydroxides, LECA, rockwool, glass wool, zeolites, fly ash, soil, limed soil, iron-enriched soil, bark, humus, lignin, compost, leaves, seaweed, algae, alginate, xanthate, peat moss, bone gelatin beads, moss, wool, cotton, cocos fibres, other plant fibres, and modification hereof, and

said at least one receiving layer and said at least one convective layer have a length of at least 5 m,

wherein said fluid liquid or gas of interest within said at least one convective layer is running in a direction parallel to said fluid liquid or gas of said at least one receiving layer, and wherein fluid liquid or gas in said at least one receiving layers is either:

- a. stagnant, or
- b. running in another direction, and/or running with a different speed, when compared to the fluid liquid or gas in the convective layer,

and wherein said substances are transferred to or from said at least one receiving layer without said receiving layers being percolated by said fluid liquid or gas of interest of the convective layer, and wherein said unit of a filter is located such that said at least one convective

layer and said at least one receiving layer are positioned horizontally or at an angle between horizontal and inclining 45° from horizontal.

65. (Previously presented) The device according to claim 64, further comprising a second receiving layer adjacent the convective layer opposite the at least one receiving layer, being a sandwich filter.

66. (Previously presented) The device according to claim 65, comprising a stack of sandwich filters, the stack comprising at least 2 sandwich filters.

67. (Previously presented) The device according to claim 64, comprising a stack of alternating convective/receiving layers.

68. (Previously presented) The device according to claim 64, wherein an impermeable layer surrounds the device to seal it from the surroundings on all surfaces except the inlet and outlet.

69. (Previously presented) The device according to claim 64, wherein the receiving layers comprises material selected from the group consisting of sand, gravel, perlite, vermiculite, anthracite, activated carbon, charcoal, soil, limed soil, iron-enriched soil, diatomaceous soil, chitin, chitosan, pozzolan, lime, marble, clay, iron-oxide-coated miners, double metal-hydroxides, LECA, rockwool, zeolithes, fly ash, bark, lignin, compost, seaweed, algae, alginate,

xanthate, peat moss, bone gelatin beads, moss, wool, cotton, other plant fibres, combinations thereof, and modifications thereof.

70. (Previously presented) The device according to claim 64, wherein the convective layer comprises a mass of random filament-type plastic fibers with a density which is sufficient to support the device without significant collapse, but allow water to pass freely there through.

71. (Previously presented) The device according to claim 70, wherein the convective layer comprises a polyethylene or polyester fibrous mesh.

72. (Previously presented) The device according to claim 64, wherein the convective layer comprises a mass of open-structured plant fibers with a density which is sufficient to support the device without significant collapse, but allow water to pass freely there through.

73. (Previously presented) The device according to claim 64, further comprising a pump for pumping liquid or gas through the filter unit.

74. (Previously presented) The device according to claim 64, further comprising a pre-filter adapted to remove particulate material from the liquid or gas prior to passing the liquid or gas into the filter.

75. (Withdrawn) A method of filtering wastewater comprising directing wastewater into a device according to claim 64.

76. (Withdrawn) A method of filtering gas comprising directing gas into a device according to claim 64.